

1966 OPERATING SUMMARY

**GALT**

**water pollution  
control plant**

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G35  
W38  
1966  
MOE

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**ONTARIO WATER RESOURCES COMMISSION**

**Division of Plant Operations**

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ONTARIO WATER RESOURCES COMMISSION

OFFICE OF THE GENERAL MANAGER

Members of the Galt Local Advisory Committee,  
City of Galt.

Gentlemen:

We are pleased to submit to you the 1966 Operating Summary for the  
Galt Water Pollution Control Plant, OWRC Project No. 61-S-90.

It is hoped that our joint participation in efforts to combat water pollution  
will have even more success in the coming year.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,  
General Manager.

TD  
227  
G35  
W38  
1966  
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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

TELEPHONE 365-

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J. H. H. ROOT, M.P.P.  
VICE-CHAIRMAN

D. S. CAVERLY  
GENERAL MANAGER

W. S. MACDONNELL  
COMMISSION SECRETARY

General Manager,  
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1966 Operating Summary for the Galt Water Pollution Control Plant, OWRC Project No. 61-S-90.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

A handwritten signature in cursive script, appearing to read "B. C. Palmer".

B. C. Palmer, P. Eng.,  
Director,  
Division of Plant Operations.

## FOREWORD

● This operating summary contains complete information on the management of the project during 1967. It contains a concise review of the year's plant operation, significant financial details, and a visual presentation in graphs and charts of technical performance.

The information will be of value to interested parties in assessing the adequacy of the project at this time and its ability to meet future requirements.

The report is the result of co-operation by several groups within the Division of Plant Operations. These include the statistics section and the technical publications section. The Division of Finance and the draughting section of the Division of Sanitary Engineering were also closely associated with its publication.

The Regional Operations Engineer, however, has had the primary responsibility for the content, and will be happy to answer any questions regarding it.

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**GALT**  
**water pollution control plant**  
operated for

THE CITY OF GALT

by the

ONTARIO WATER RESOURCES COMMISSION

---

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DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director:	C. W. Perry
Regional Supervisor:	D. A. McTavish
Operations Engineer:	B. W. Hansler

801 Bay Street      Toronto 5



## **'66 REVIEW**

A total of 1903.93 million gallons of sewage was treated at the Galt Water Pollution Control Plant during the year at a total operating cost of \$83,578.97. The operating cost per million gallons and the cost per pound of BOD removed were \$43.90 and \$0.03 respectively.

The average daily flow during the year was 5.21 million gallons. The design flow of 5.0 million gallons per day was exceeded 65 percent of the time. Flow figures were not available during July and August due to an inoperative flow meter.

The average BOD and suspended solids removal efficiencies were 91.5 percent and 89.5 percent respectively.

The primary digester was cleaned out and repaired during the year. An access hole approximately 2 feet in diameter has been installed in the side of this digester to facilitate future clean-out.

## PROJECT COSTS

NET CAPITAL COST (Final)	\$1,211,259.48
DEDUCT - Portion Financed by CMHC (Estimated)	<u>804,340.16</u>
Long Term Debt to OWRC	\$ <u>406,919.32</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1966	\$ <u>56,728.31</u>
Net Operating	\$ 83,578.97
Debt Retirement	14,763.00
Reserve	8,218.86
Interest Charged	22,894.22
	<u>                  </u>
TOTAL	\$ <u>129,555.05</u>

### RESERVE ACCOUNT

Balance at January 1, 1966	\$ 23,512.57
Deposited by Municipality	8,318.86
Interest Earned	<u>1,450.54</u>
	\$ 33,281.97
Less Expenditures	3,780.03
	<u>                  </u>
Balance at December 31, 1966	\$ <u>29,501.94</u>

## MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	4070.54	3088.60	202.02	110.49		237.58	12.74	189.98	199.45	29.68	
FEB	7726.25	2631.76	386.19	411.95	579.42	1346.91	260.39	466.70	1161.40	317.45	164.08
MARCH	5175.00	2746.48		53.01	574.26		366.26	493.55	582.23	278.65	80.56
APRIL	7859.99	4593.08	156.28	444.64	570.98	1378.02	269.80	72.12	154.04	179.06	41.97
MAY	4395.21	2803.57	296.96	36.83	611.02	141.73	106.16	11.68	139.66	195.55	52.05
JUNE	6026.34	3227.03	312.56	232.40	592.79	739.12	194.80	31.38	477.06	163.41	55.79
JULY	8786.11	2830.61	159.67		633.90	3186.37	185.07	34.15	462.35	1085.56	208.43
AUG	5331.22	3059.53	538.41		561.11	334.98	85.93	125.91	236.08	223.75	165.52
SEPT	9290.91	4310.36	890.31		632.11	1675.76	101.06	140.92	1053.84	367.54	119.01
OCT	8383.34	2960.98	554.10		674.86	2056.25	52.26	179.05	90.38	1601.41	214.05
NOV	7422.24	2827.89	335.96	373.47	716.52	1582.04	502.92	120.71	293.38	430.10	239.25
DEC	9111.82	3171.23	171.26	359.36	1474.87	341.48	503.47	519.83	1844.64	545.18	180.50
TOTAL	83578.97	38251.12	4003.72	2022.15	7621.84	13020.24	2640.86	2385.98	6694.51	5417.34	1521.21

\* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$3192.06

## YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1964	1895.161	\$77,875.88	* \$10.57	\$41.09	3 CENTS
1965	1853.883	73,672.49	9.52	39.74	4 CENTS
1966	1903.925	83,578.97	10.30	43.90	3 CENTS

\* BASED ON ESTIMATED ANNUAL POPULATION AND 3.9 PERSONS PER FAMILY

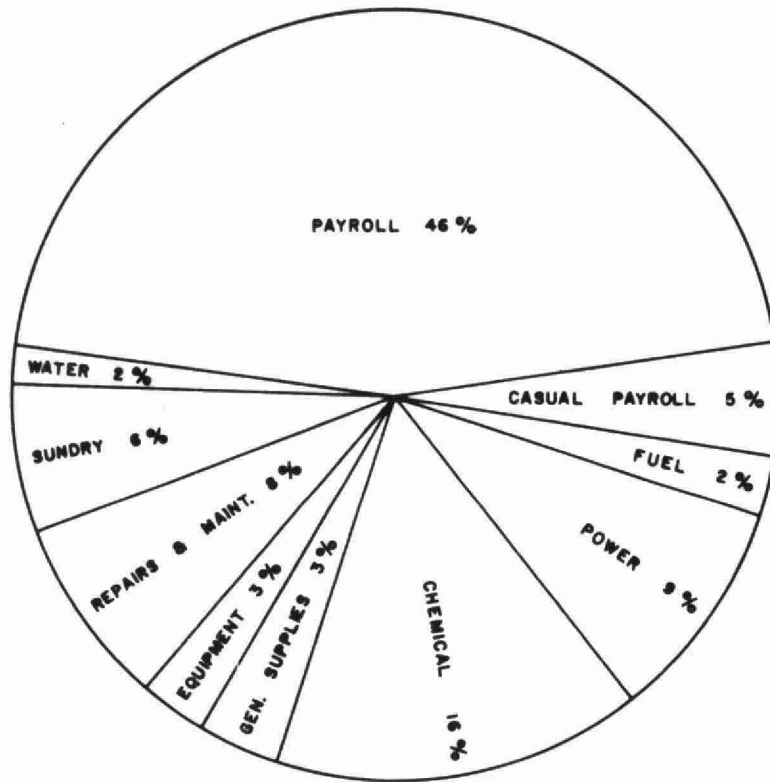
## VACUUM FILTER COSTS (MONTHLY)

MONTH	COST PER MONTH					TOTAL	COST PER TON DRY WEIGHT					TOTAL
	FeCl <sub>3</sub>	LIME	LABOUR	ELEC	MAINT		FeCl <sub>3</sub>	LIME	LABOUR	ELEC	MAINT	
JANUARY	500.20	208.73	348.48	63.42	50.72	1171.55	8.04	3.36	5.60	1.02	0.82	20.28
FEBRUARY	221.67	109.77	155.36	41.80	22.82	551.42	5.41	2.68	3.79	1.02	0.56	14.60
MARCH	163.49	85.25	120.52	32.35	17.75	419.36	5.16	2.69	3.80	1.02	0.56	14.38
APRIL	146.17	70.01	108.90	27.91	15.72	368.71	5.34	2.56	3.98	1.02	0.57	14.77
MAY	324.19	172.14	246.84	69.91	36.01	849.09	4.73	2.51	3.60	1.02	0.53	13.47
JUNE	634.92	384.20	602.58	144.66	88.24	1854.60	4.48	2.71	4.25	1.02	0.62	14.24
JULY	195.57	126.83	178.60	30.11	25.86	556.97	6.62	4.30	6.05	1.02	0.88	20.71
AUGUST	346.55	212.46	342.67	51.71	50.21	1003.60	6.84	4.19	6.76	1.02	0.99	21.60
SEPTEMBER	537.91	299.38	527.08	72.81	77.09	1514.27	7.54	4.19	7.38	1.02	1.08	23.01
OCTOBER	570.52	281.51	516.91	67.98	75.57	1512.49	8.56	4.22	7.76	1.02	1.13	24.50
NOVEMBER	301.36	181.53	322.34	35.58	47.16	887.97	8.64	5.20	9.24	1.02	1.35	27.69
DECEMBER	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	3942.55	2131.81	3470.28	638.24	507.15	10390.03						
AVERAGE PER MONTH	358.41	177.65	315.48	58.02	46.10	865.84	6.49	3.22	5.66	1.02	0.83	16.04

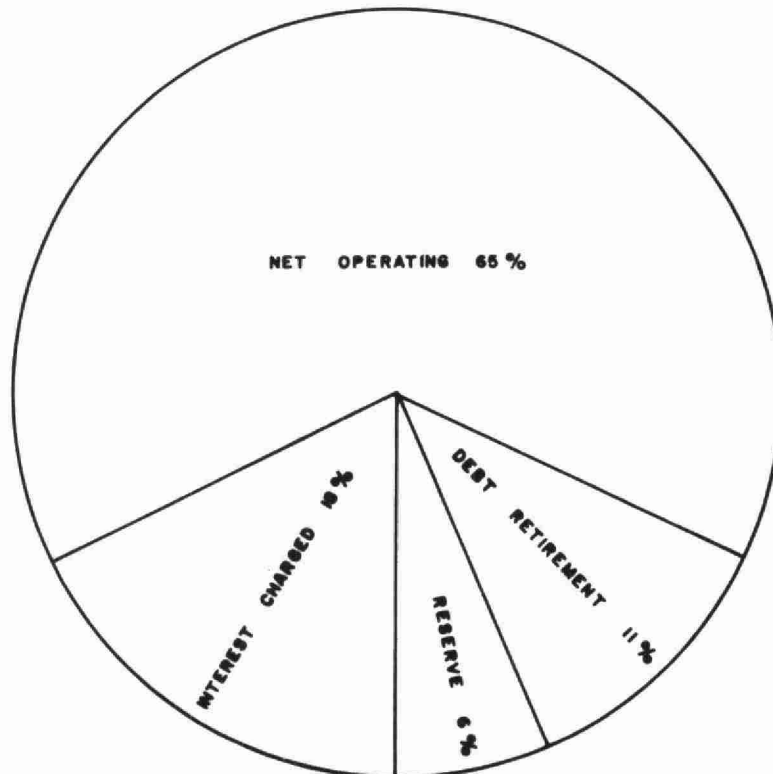
## COMMENTS

From June to November, prior to and during clean-out of the primary digester, considerably more sludge was filtered than normally in order to empty the digester. The vacuum filter was not operated in December because the sludge was pumped to the empty digester after completion of repairs.

## 1966 OPERATING COSTS



## TOTAL ANNUAL COST



## **Process Data**

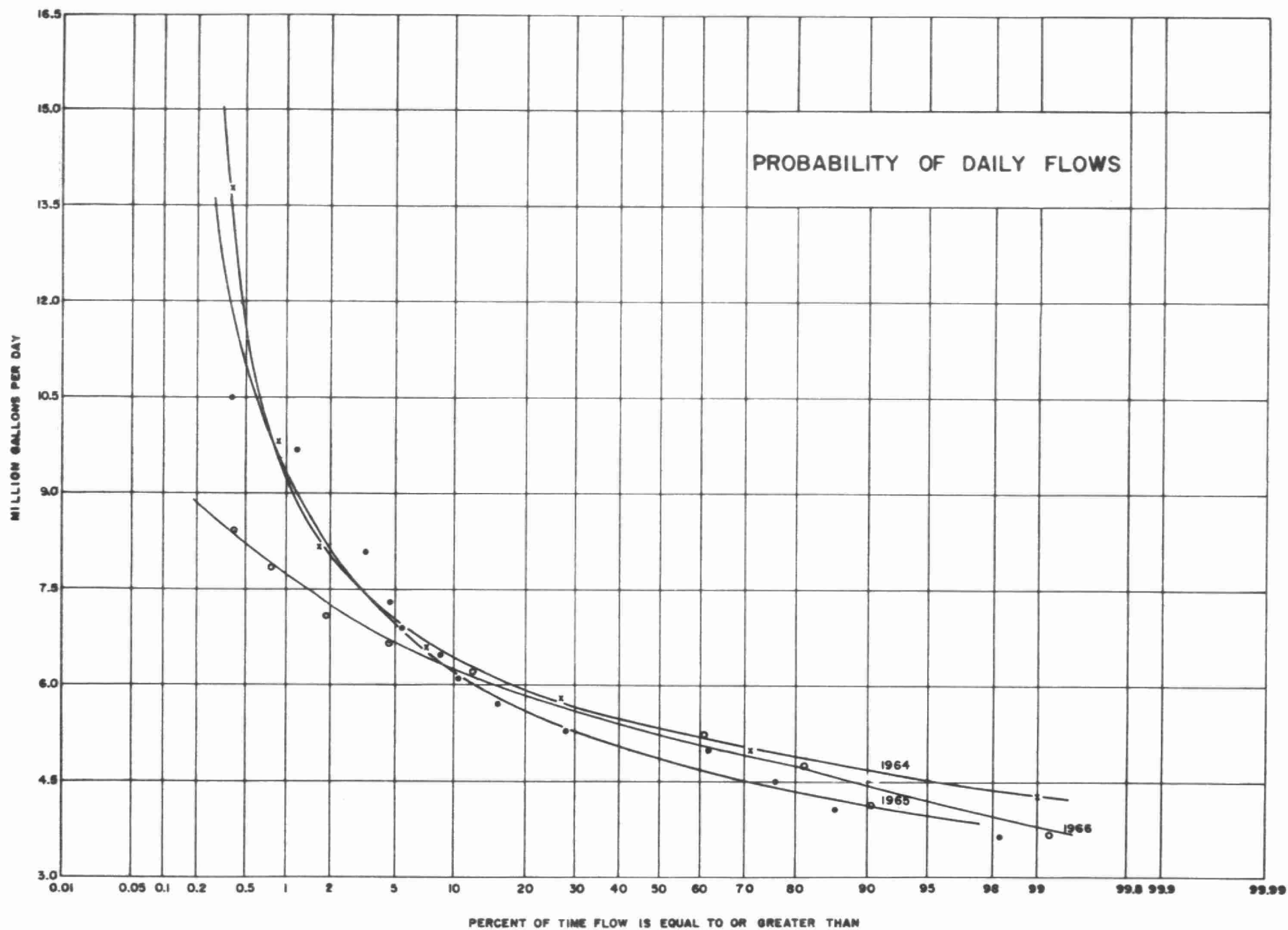
Average daily flows plotted on a monthly and probability basis are shown on the following two graphs.

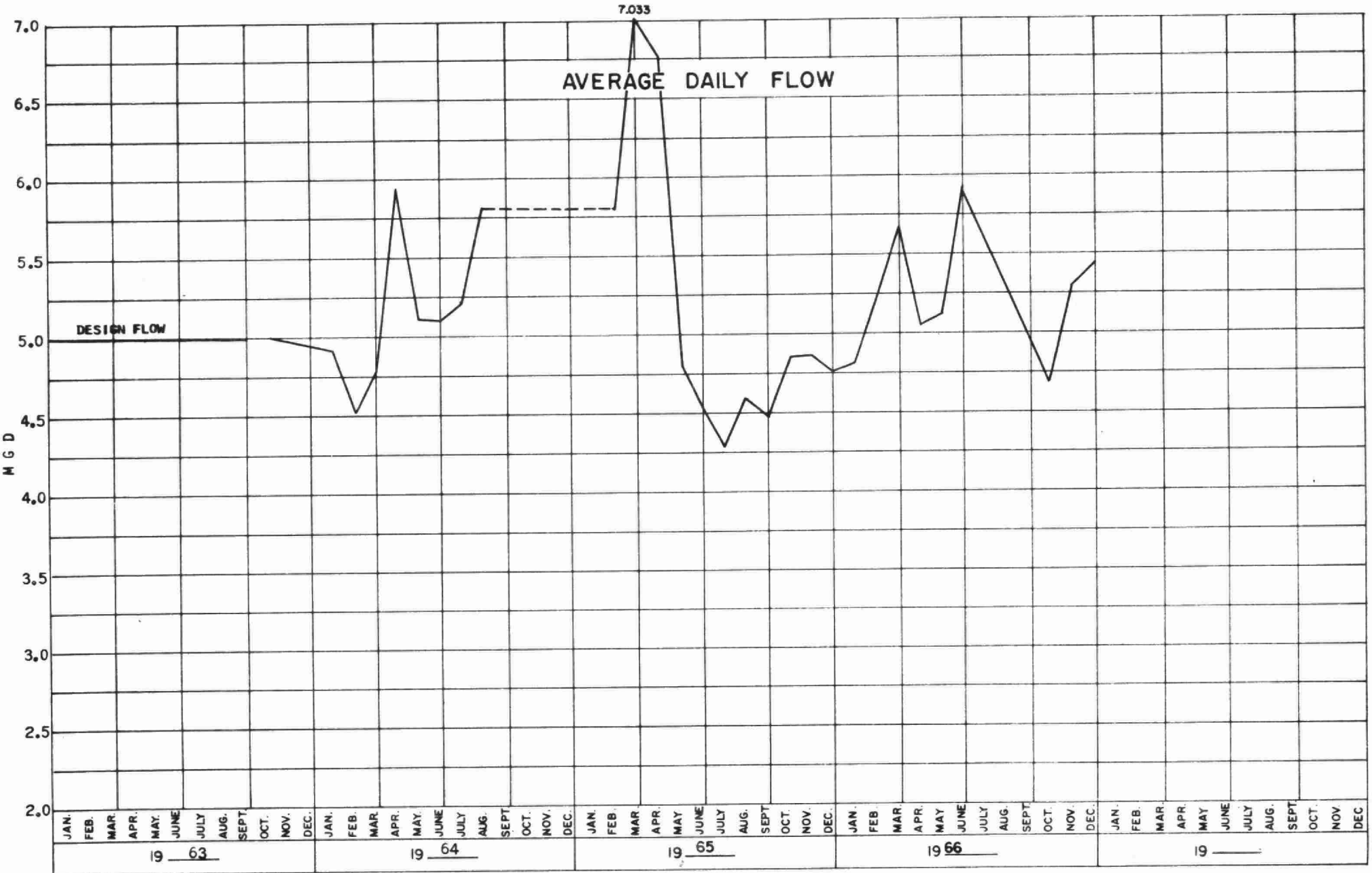
The design flow of 5.0 million was exceeded 65% of the time. The average daily flows during the months of January and October only were less than the design value, being 4.78 and 4.69 million gallons per day respectively. Owing to an inoperative flow meter, accurate flow figures were not available during July and August.

The average daily flow during the year was 5.21 million gallons.

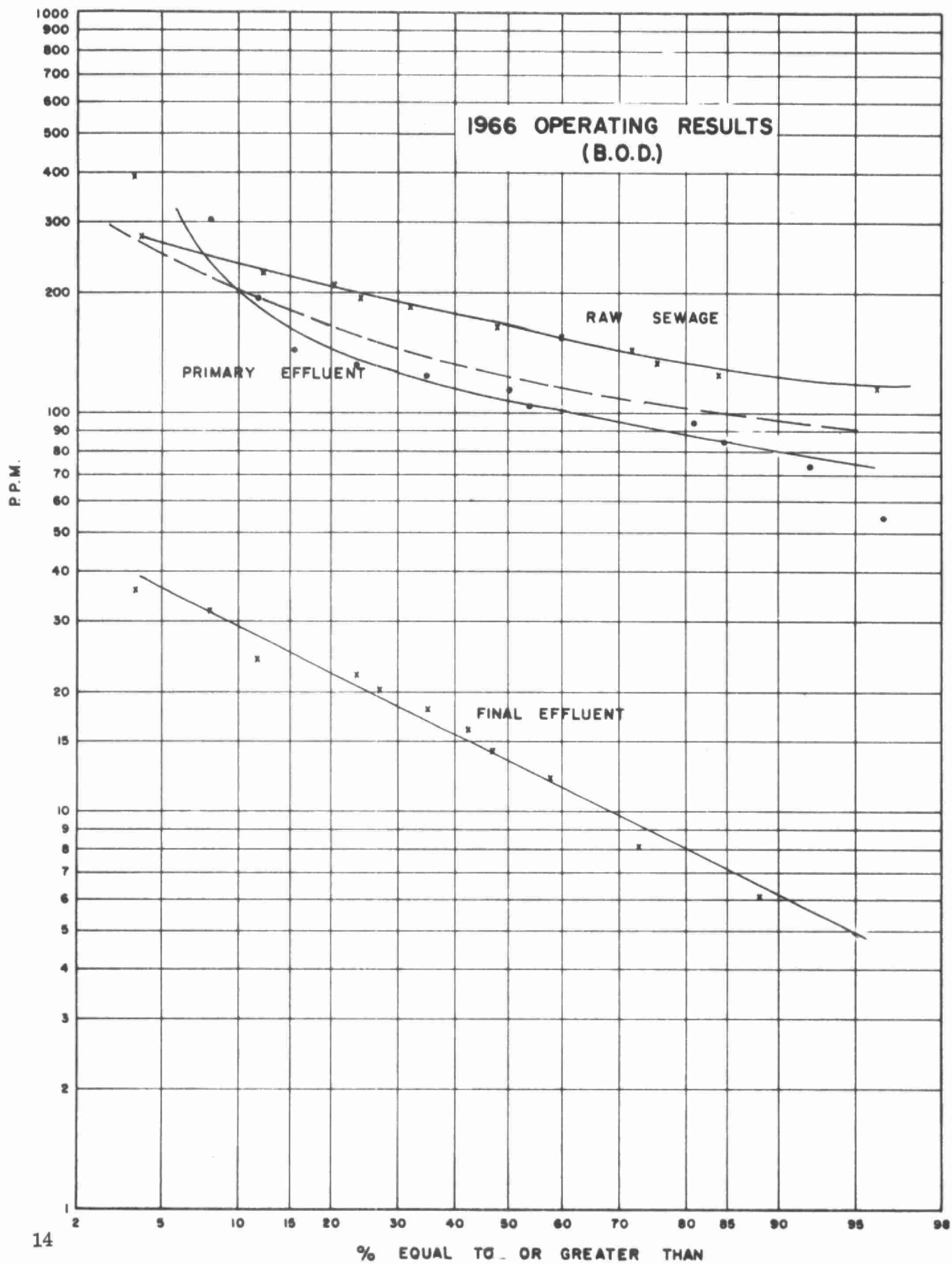
NOTE: For Graphs on Pages 15 and 16

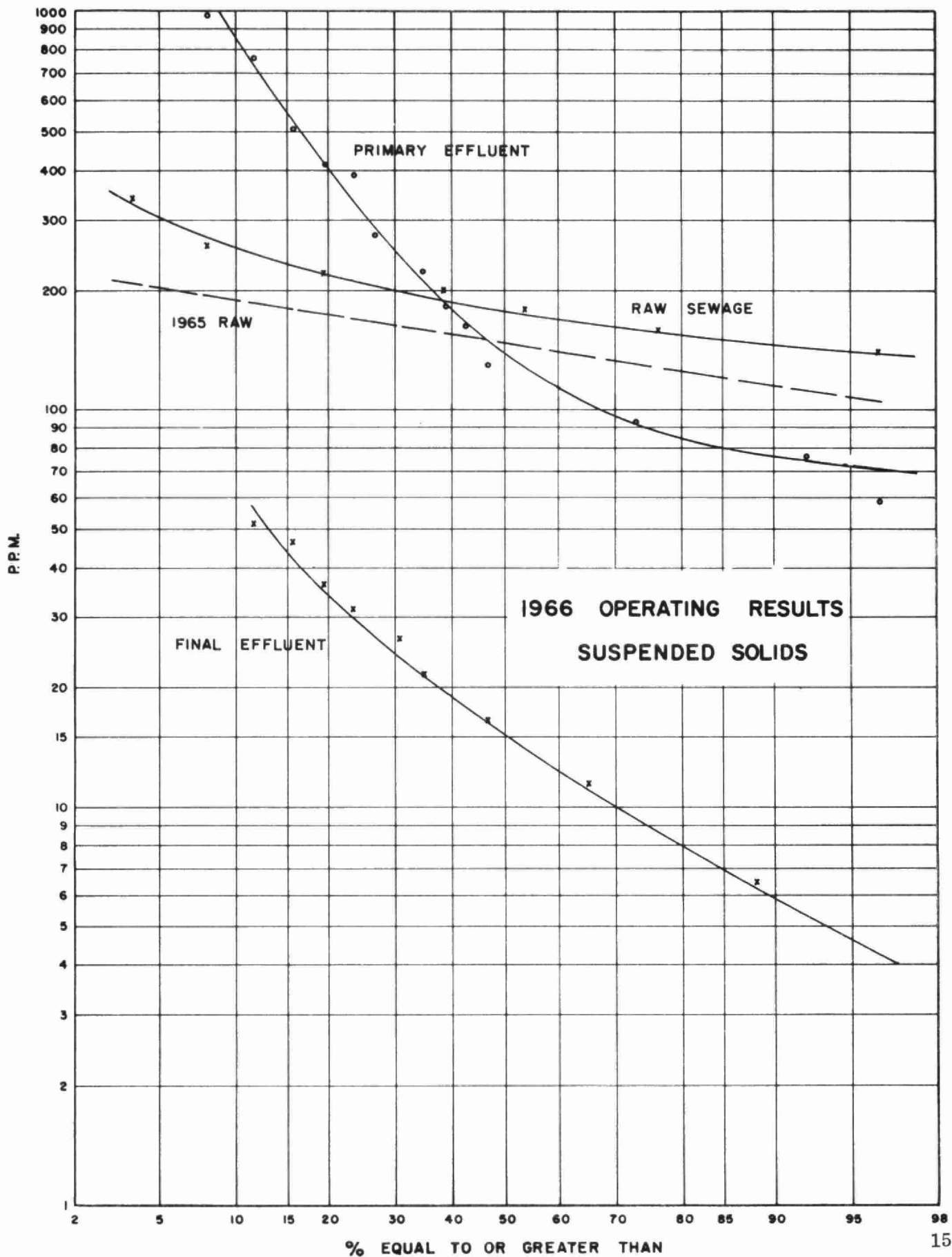
Occasionally the BOD and suspended solids of the primary effluent were greater than that of the raw sewage. This high loading can be attributed to vacuum filter wash water and filtrate.

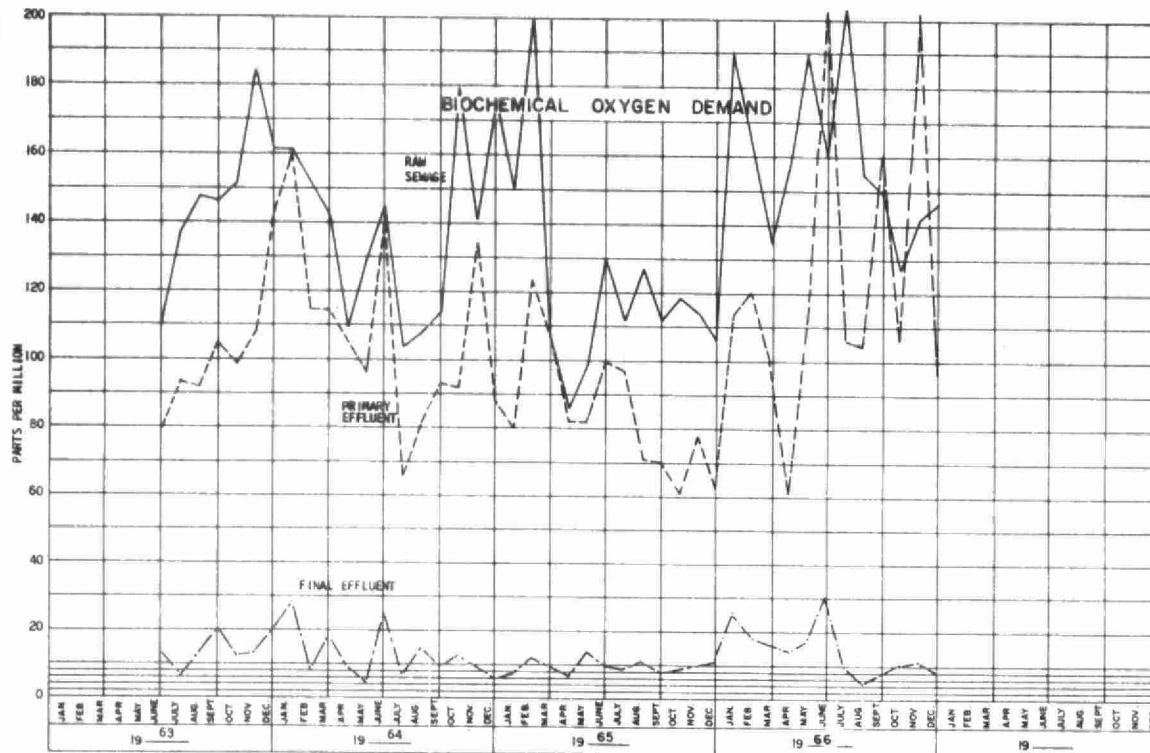




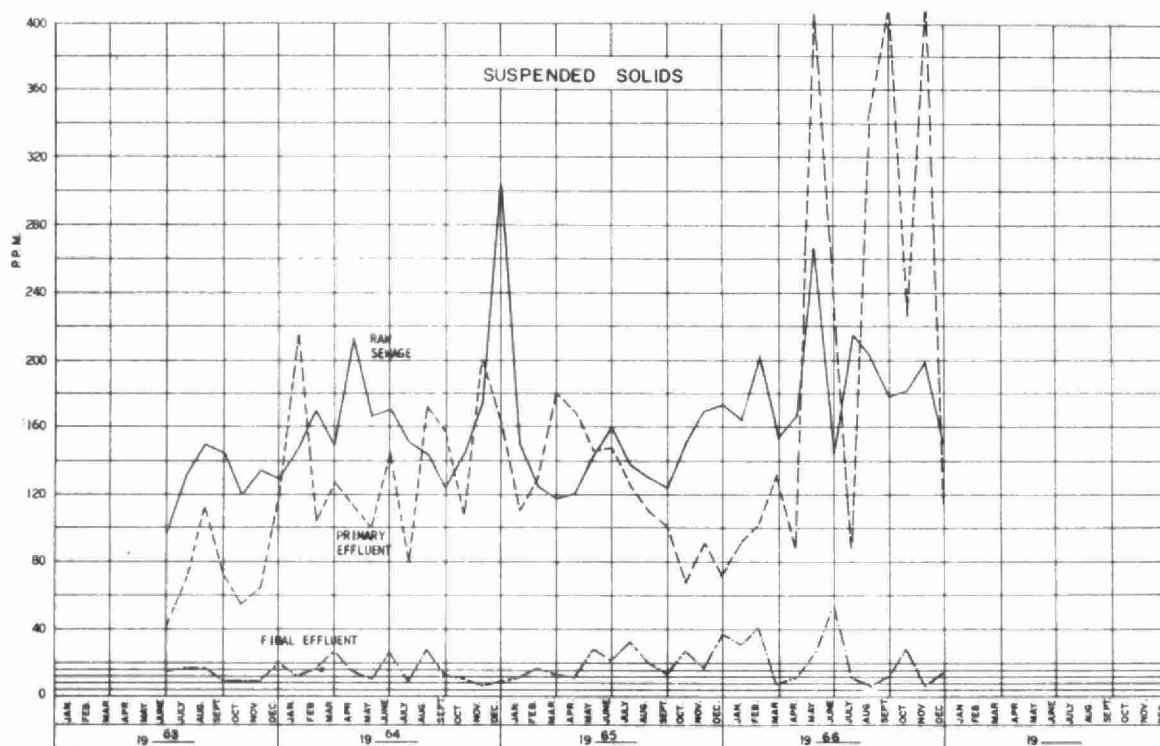








## MONTHLY VARIATIONS



# GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	190	25	87.0	122.8	164	29	82.0	100.4	-
FEB.	160	18	88.5	103.8	201	40	80.0	117.6	4
MAR.	135	16	88.0	105.1	153	6	96.0	129.8	-
APR.	157	14	91.0	108.3	166	10	94.0	118.2	-
MAY	191	17	91.0	138.1	265	24	91.0	191.3	5
JUNE	160	30	81.0	114.6	142	52	63.5	79.4	5
JULY	250	10	96.0	194.0	214	10	95.5	164.9	4
AUG.	155	5	96.5	121.3	202	5	97.0	159.3	13
SEPT.	149	7	95.0	106.5	179	11	94.0	126.0	3
OCT.	127	10	92.0	84.9	181	27	85.0	111.8	18
NOV.	142	11	92.0	104.0	199	7	96.5	152.5	3
DEC.	146	8	94.5	116.0	147	12	92.0	113.5	14
TOTAL	-	-	-	1427.9	-	-	-	1570.7	69
AVG.	164	14	91.5	119.0	184	19	89.5	130.9	6

## COMMENTS

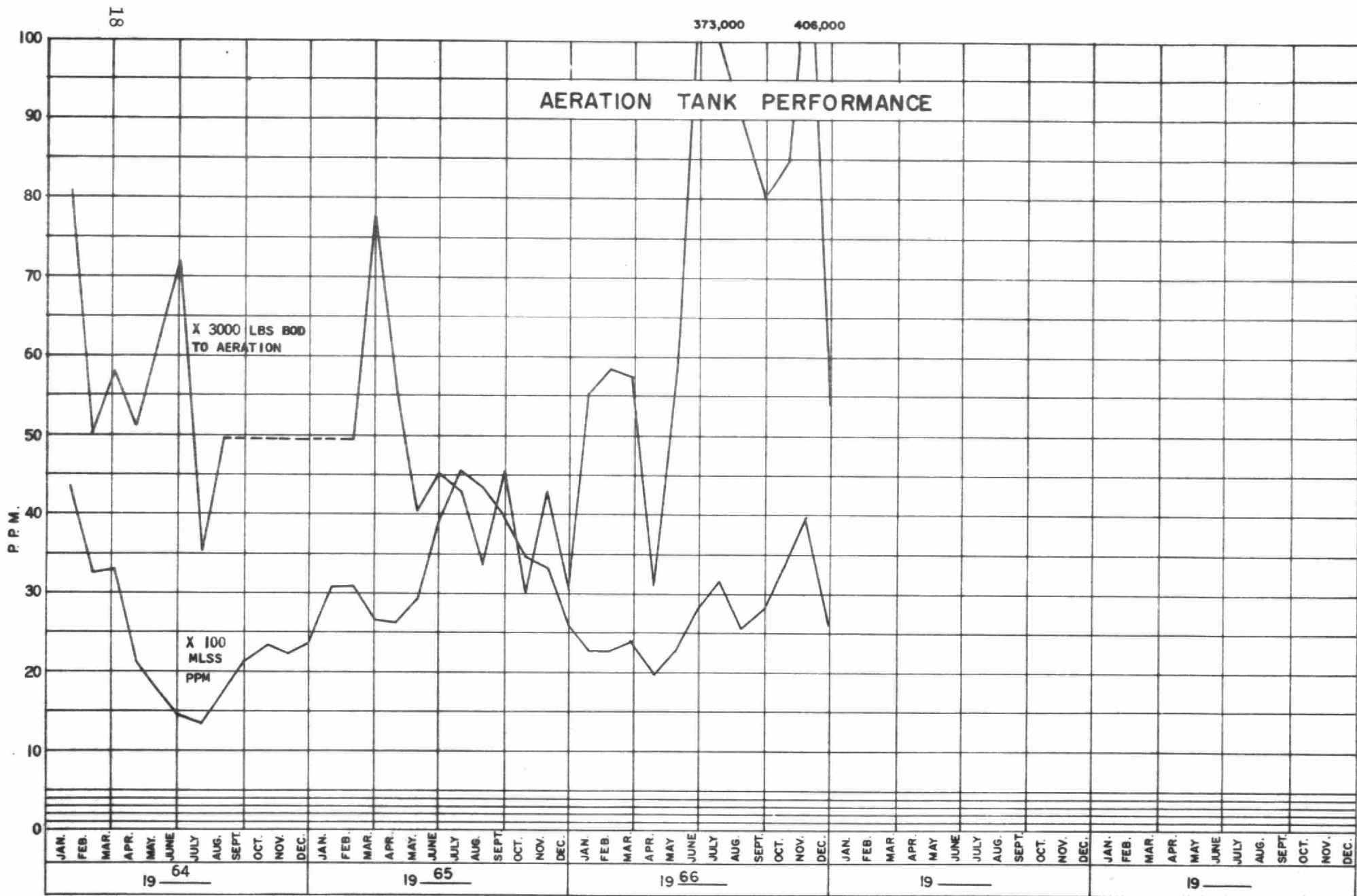
BOD and suspended solids concentrations of raw sewage, primary effluent and final effluent are plotted on a probability and monthly basis on the accompanying graphs .

The raw sewage BOD and suspended solids concentration exceeded the design values of 250 ppm for each 8% and 13% of the time respectively. The average raw sewage BOD concentration was 122 ppm, 49% of the design value; the average suspended solids concentration of 142 ppm was 57% of the design value.

The average effluent BOD and suspended solids concentrations were 14 ppm and 19 ppm respectively. The OWRC objectives of 15 ppm for BOD and suspended solids concentrations were exceeded 43% and 51% of the time respectively.

The average BOD and suspended solids removal efficiencies were 91.5% and 89.5% respectively.

During the year, 69 cubic feet of grit, an average of 0.035 cubic feet per million gallons, was removed.



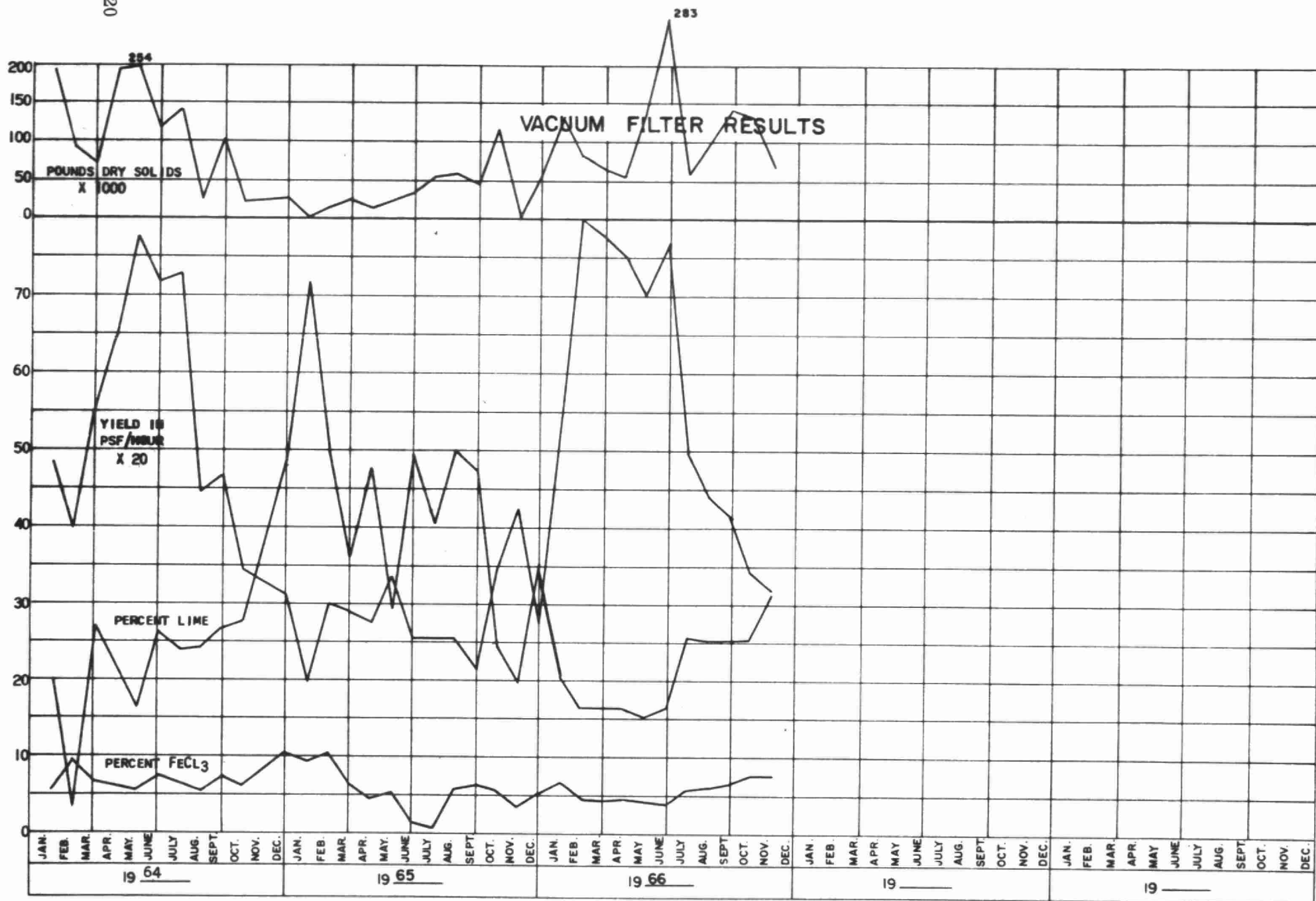
## AERATION SECTION

MONTH	PRIM. EFFL B.O.D. PPM.	ML.SS. PPM.	LBS BOD. PER 100 LBS. M. L. S. S.
JANUARY	113	2247	20
FEBRUARY	120	2234	19
MARCH	98	2317	17
APRIL	61	1927	11
MAY	112	2201	18
JUNE	212	2794	31
JULY	106	3116	-
AUGUST	104	2508	-
SEPTEMBER	161	2797	20
OCTOBER	106	3348	10
NOVEMBER	256	3985	23
DECEMBER	94	2626	13
TOTAL	-	-	-
AVERAGE	129	2675	18

## COMMENTS

The average pounds of BOD per 100 pounds of MLSS ratio of 18 is within the recommended range for this ratio.

Air supply cannot be directly measured as the plant utilizes mechanical aeration.



## VACUUM FILTER OPERATION

MONTH	FILTER HOURS		% SOLIDS DIGEST SLUDGE	LBS. DRY SOLIDS FILTERED	+ LBS. LIME	+ % LIME	LBS. FeCl <sub>3</sub>	% FeCl <sub>3</sub>	% SOLIDS FILTERED SLUDGE	YIELD PSF/HOUR
	#1	#2								
JAN.	120.0	-	4.90	124362	17570	14.1	8435	6.8	22.3	2.60
FEB.	53.5	-	5.06	81965	9240	11.3	3738	4.6	22.4	4.01
MAR.	41.5	-	5.30	63423	7175	11.3	2757	4.3	24.8	3.90
APR.	37.5	-	5.40	54728	6230	11.4	2465	4.5	24.4	3.76
MAY.	85.0	-	5.00	137079	14490	10.6	5467	4.0	25.4	3.50
JUNE	207.5	-	5.09	283656	32340	11.4	10707	3.8	23.7	3.80
JULY	61.5	-	4.30	59054	10675	18.1	3298	5.6	24.5	2.50
AUG.	118.0	-	4.50	101395	17885	17.6	5844	5.8	25.3	2.20
SEPT.	181.5	-	4.10	142762	25200	17.7	9071	6.4	25.5	2.09
OCT.	178.0	-	4.40	133303	23695	17.8	9621	7.2	25.9	1.70
NOV.	111.0	-	3.70	69760	15281	21.9	5082	7.3	25.1	1.59
DEC.	*	-	-	-	-	-	-	-	-	-
TOTAL	1195.0	-	-	1251487	179781	-	66485	-	-	-
AVG.	108.6	-	4.70	113772	14982	14.4	6044	5.3	24.5	2.88

\* NO COIL FILTER OPERATION DURING DECEMBER

\*\* 11-MONTH AVERAGE

+ LIME IS EXPRESSED AS 100% CAO

### COMMENTS

During the period from June to November the vacuum filter was operated for longer periods in order to empty the primary digester for clean-out. Raw sludge from the primary clarifiers was also filtered during this period.



### SLUDGE TO DIGESTERS

Month	1000's cu. ft.	% Solids	% Vol. Mat.
January	66.99	4.48	2.91
February	58.80	4.92	3.51
March	50.07	4.18	3.00
April	46.69	4.17	2.99
May	39.66	-	-
June	33.17	-	-
July	21.59	-	-
August	46.01	-	-
September	33.20	4.02	2.41
October	21.83	4.57	2.27
November	5.75	4.07	1.97
December	45.15	-	-
Total	46.891	-	-
Average	39.08	4.34	2.72

### **COMMENTS**

From June to November, the primary digester was out of operation for clean-out and repairs. During this period the secondary digester was used as a holding tank, receiving raw sludge from the primary clarifiers when the vacuum filter was not in operation.

## CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	148.879	5900	3.96
FEBRUARY	146.137	4950	3.39
MARCH	176.605	5760	3.26
APRIL	151.586	4885	3.22
MAY	158.782	5030	3.17
JUNE	176.346	5450	3.09
JULY	161.696	5320	3.29
AUGUST	161.696	5530	3.42
SEPTEMBER	150.000	5600	3.73
OCTOBER	145.235	5525	3.80
NOVEMBER	158.850	4860	3.06
DECEMBER	168.113	5180	3.08
TOTAL	1903.925	63990	-
AVERAGE	158.660	5332	3.36

## COMMENTS

The chlorine dosage rate of 3.36 ppm is based on the amount of chlorine necessary to maintain a residual of 0.5 ppm after 15 minutes contact. The dosage rate is comparable to those at other plants.



## **CONCLUSIONS**

The average effluent BOD and suspended solids concentrations were 14 ppm and 19 ppm respectively which indicates that the plant afforded very good efficiency in treating the sewage. Throughout the year, the plant staff operated a clean, attractive and efficient plant for the City of Galt.

## **RECOMMENDATIONS**

Very high flows during the early part of the year and lower than normal raw sewage and BOD concentrations indicate that serious infiltration is a problem in the City of Galt sewer system. It is recommended that the City of Galt either take steps to decrease the sewer infiltration as much as possible or consider plant expansion.

[illegible]

**Environment Ontario**  
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